(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
7 February 2002 (07.02.2002)

PCT

(10) International Publication Number
WO 02/10798 A1

(51) International Patent Classification[7]: G01V 1/30

(21) International Application Number: PCT/GB01/03363

(22) International Filing Date: 26 July 2001 (26.07.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0018480.4 27 July 2000 (27.07.2000) GB

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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,

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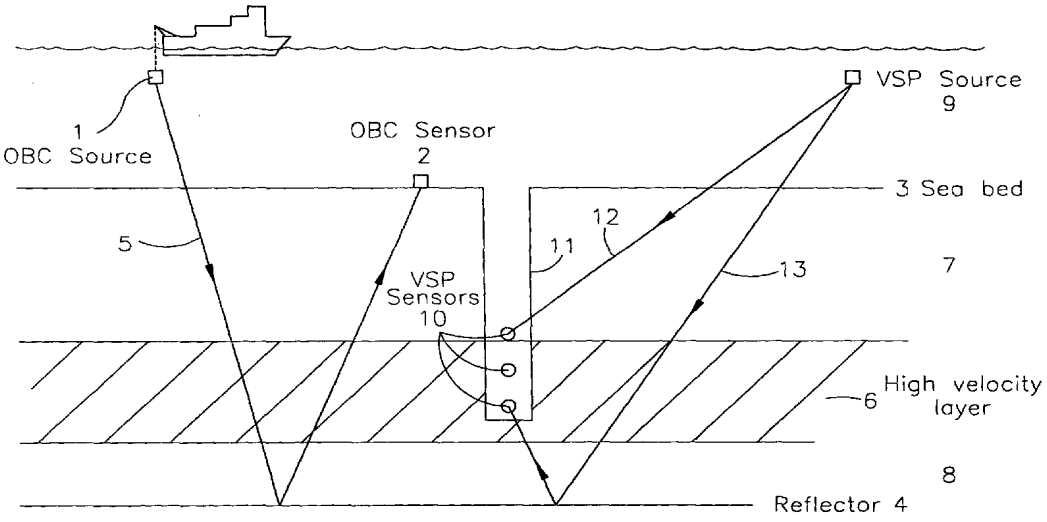
(54) Title: A METHOD OF PROCESSING SEISMIC DATA



(57) Abstract: A method of processing seismic data, for example surface seismic data such as multi-component OBC (Ocean Bottom Cable) seismic data, comprises using vertical seismic profile (VSP) seismic data to determine a model of the relationship between depth within the earth and the velocity of seismic energy. In one embodiment, an model of the relationship between depth and velocity of seismic energy for P-waves is calibrated using VSP seismic data. Then, a model of the relationship between depth and velocity of seismic energy for S-waves is calibrated using VSP seismic data. Initially the models are calibrated for the vertical velocity of P-waves and S-waves, using zero-offset or low-offset VSP data. The models may then undergo further calibration steps, such as calibration for VTI anisotropy and anelastic attenuation. Once calibration is complete, the models are used to process surface seismic data.

WO 02/10798 A1